

FIG. 1

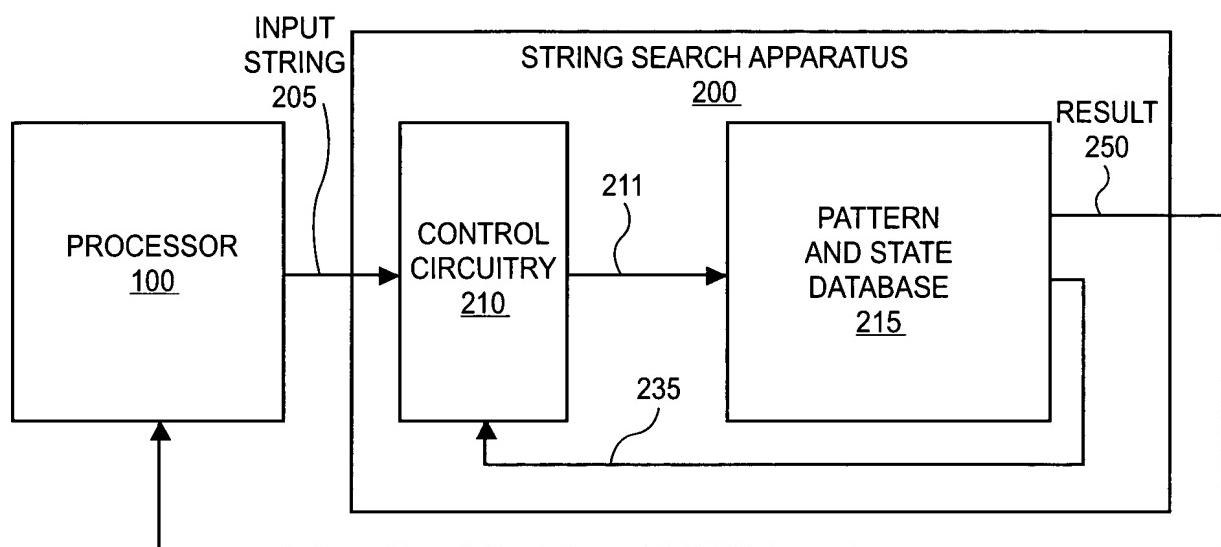


FIG. 2A

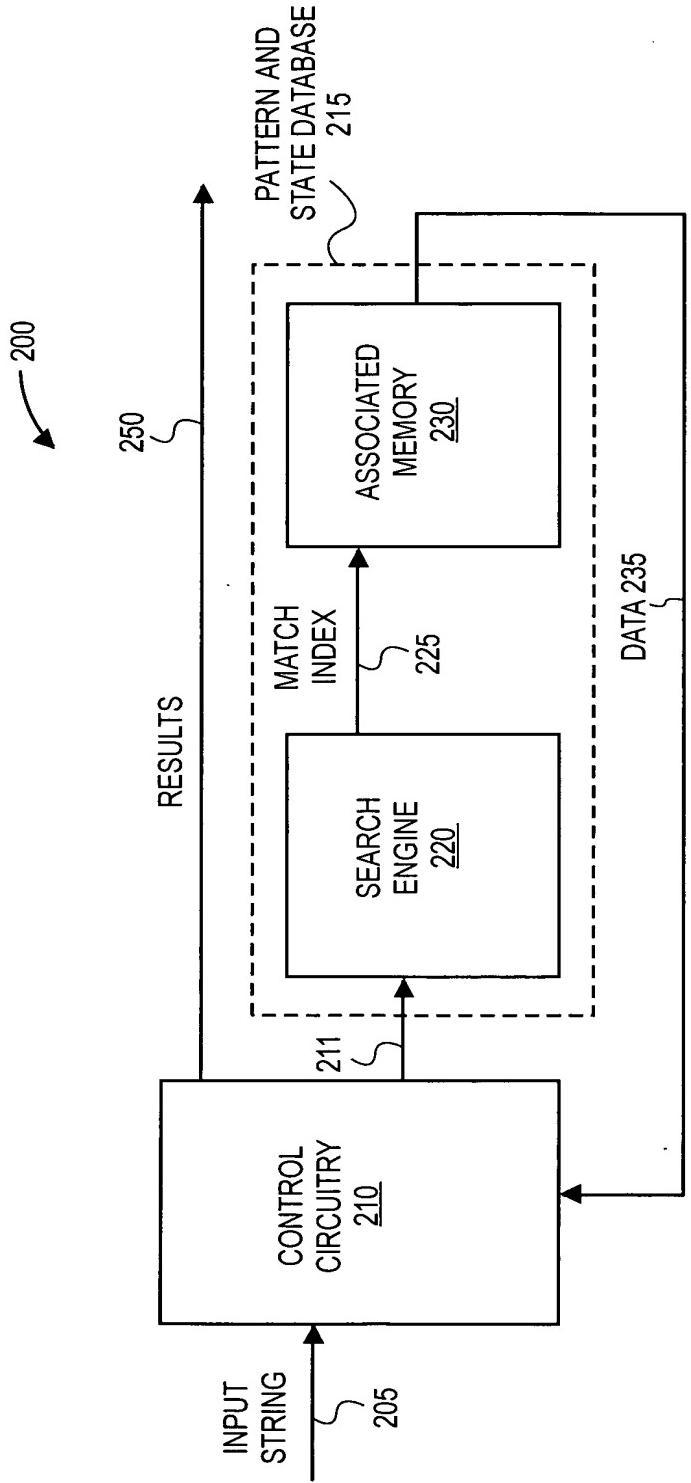
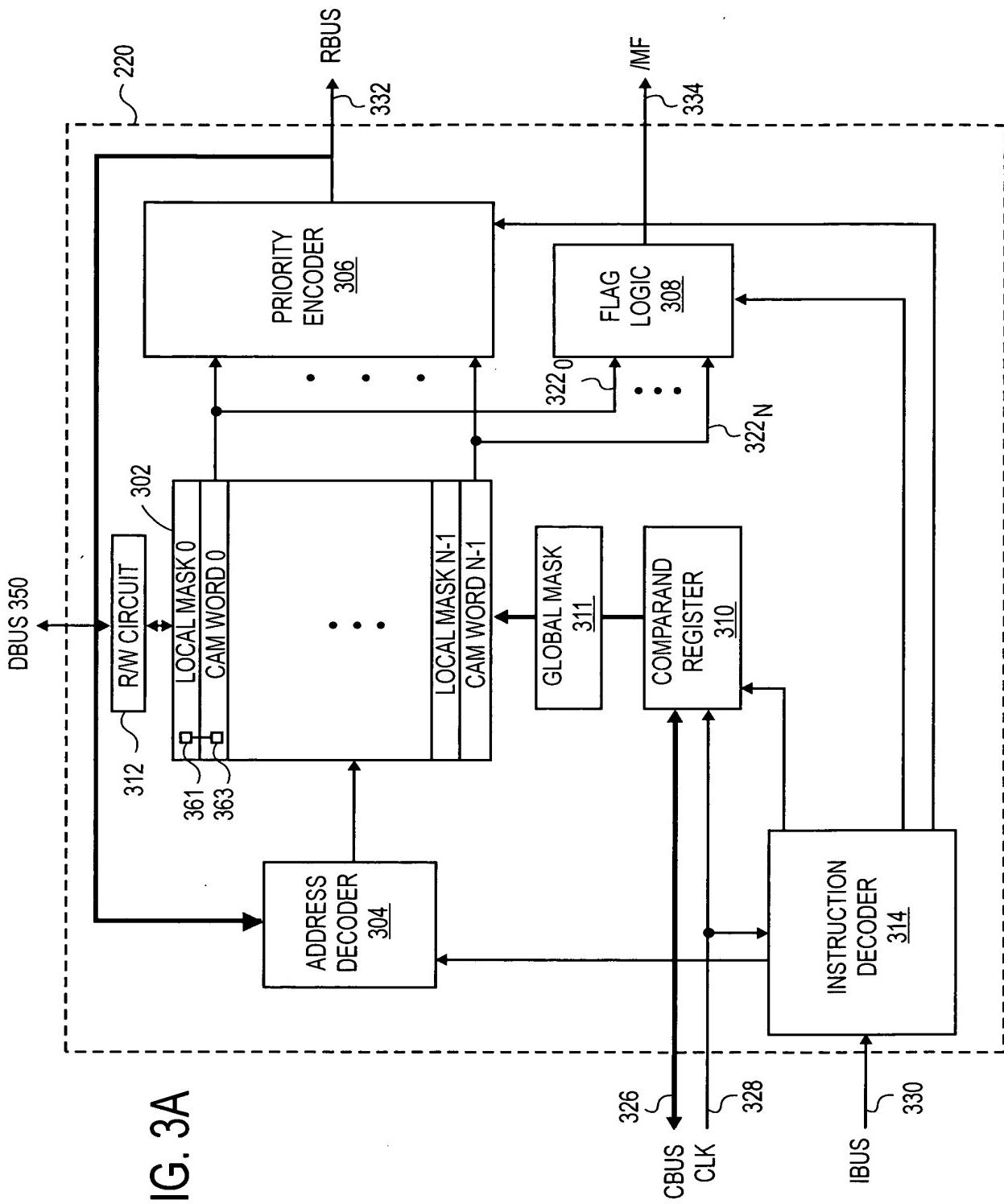


FIG. 2B

FIG. 3A



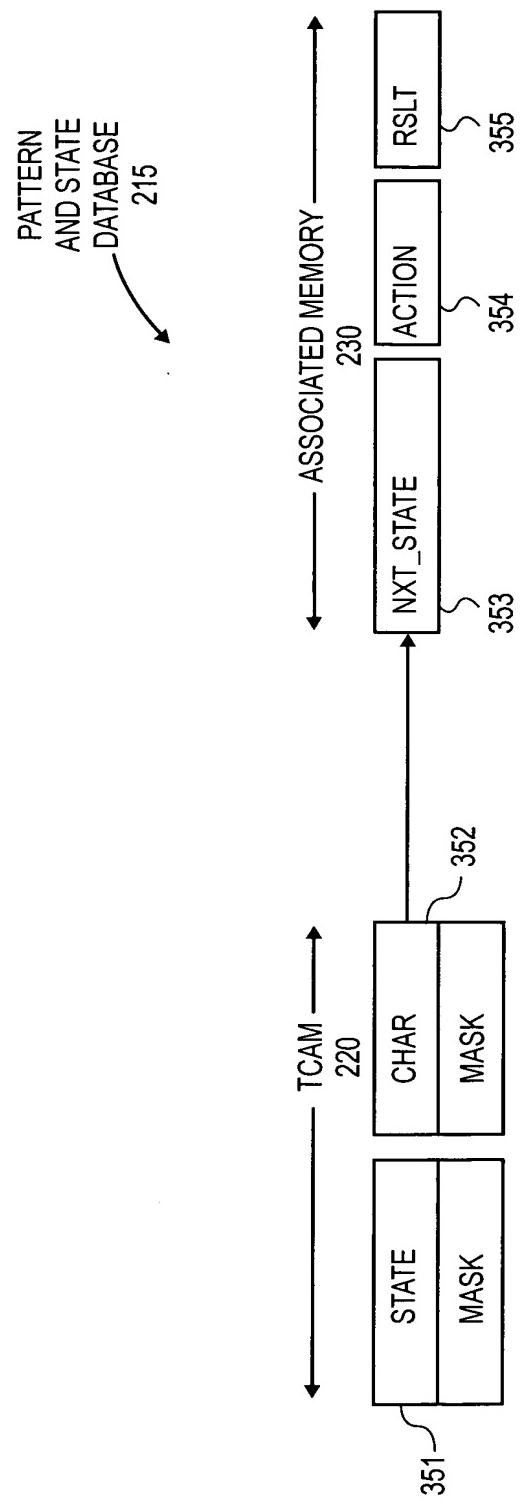
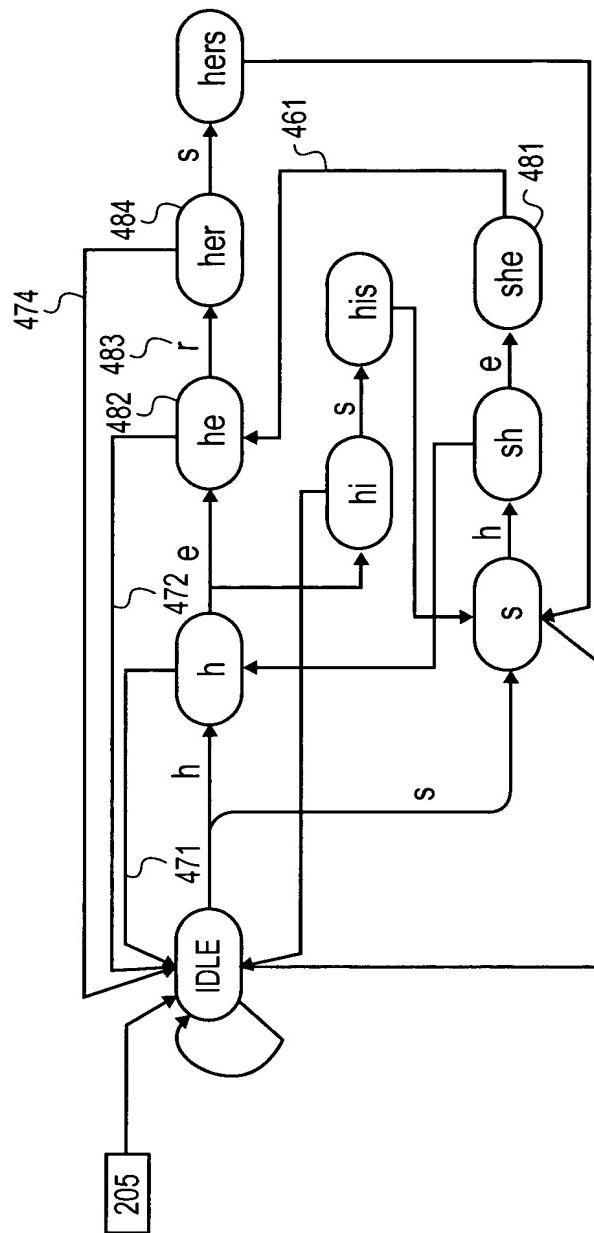


FIG. 3B

FIG. 4A



ADDRESS	STATE	CHAR	NXT STATE	ACTION	RESULT
"GOTO" TRANSITIONS					
0	IDLE	H	H	NOP	0
1	IDLE	S	S	NOP	0
2	H	E	HE	OUTPUT RESULTS	1
3	HE	R	HER	NOP	0
4	HER	S	HERS	OUTPUT RESULTS	2
5	H	I	HI	NOP	0
6	HI	S	HIS	OUTPUT RESULTS	3
7	S	H	SH	NOP	0
8	SH	E	SHE	OUTPUT RESULTS	4
FAILURE TRANSITIONS					
9	H	*	IDLE 471	FAILURE	0
10	HE	*	IDLE 472	FAILURE	0
11	S	*	IDLE 473	FAILURE	0
12	SH	*	H	FAILURE	0
13	SHE	*	HE	FAILURE	0
14	HIS	*	S	FAILURE	0
15	HER	*	IDLE 474	FAILURE	0
16	HERS	*	S	FAILURE	0

GOTO BLOCK 491      FAILURE BLOCK 492

TCAM → 220      ASSOCIATED MEM → 230

FIG. 4B

PATTERN AND  
STATE DATABASE

215

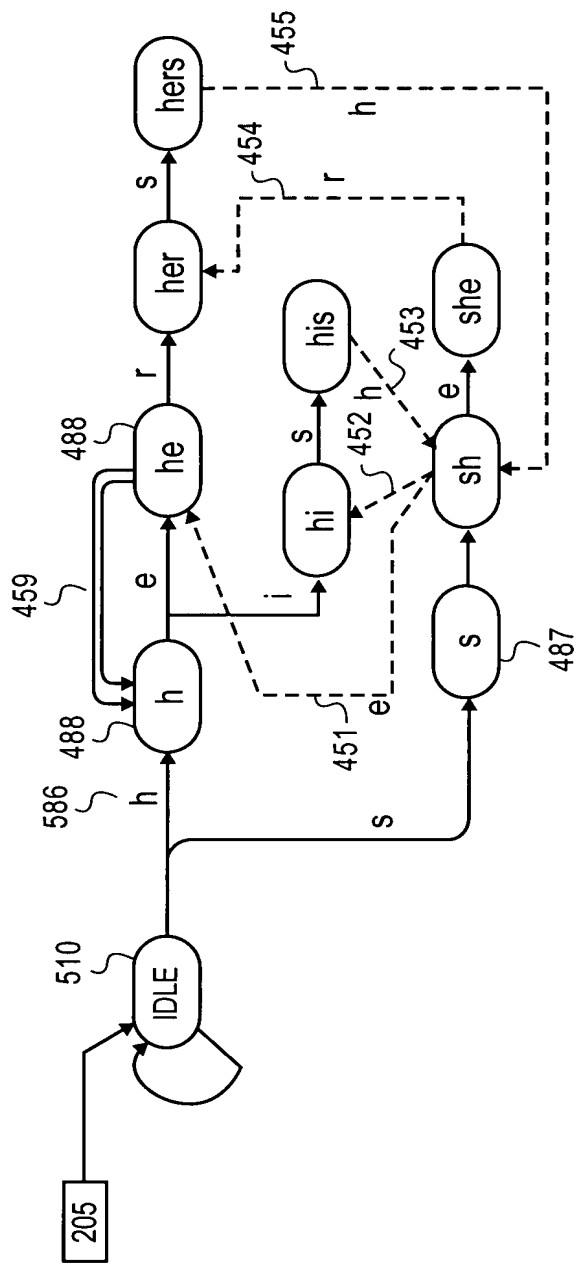
ADDRESS	STATE	CHAR	NXT STATE	ACTION	RESULT
"GOTO" TRANSITIONS					
0	IDLE	H	H	NOP	0
1	IDLE	S	S	NOP	0
2	H	E	HE	OUTPUT RESULTS	1
3	HE	R	HER	NOP	0
4	HER	S	HERS	OUTPUT RESULTS	2
5	H	I	HI	NOP	0
6	HI	S	HIS	OUTPUT RESULTS	3
7	S	H	SH	NOP	0
8	SH	E	SHE	OUTPUT RESULTS	4
FAILURE TRANSITIONS					
12	SH	*	H	FAILURE	0
13	SHE	*	HE	FAILURE	0
14	HIS	*	S	FAILURE	0
16	HERS	*	S	FAILURE	0
**		*	IDLE 475	FAILURE	0

GOTO BLOCK 491      FAILURE BLOCK 492  
 351                  352                  353                  354                  355  
 220                  230                  230

→ TCAM → ASSOCIATED MEM → ←  
 PATTERN AND STATE DATABASE 215

FIG. 4C

FIG. 5



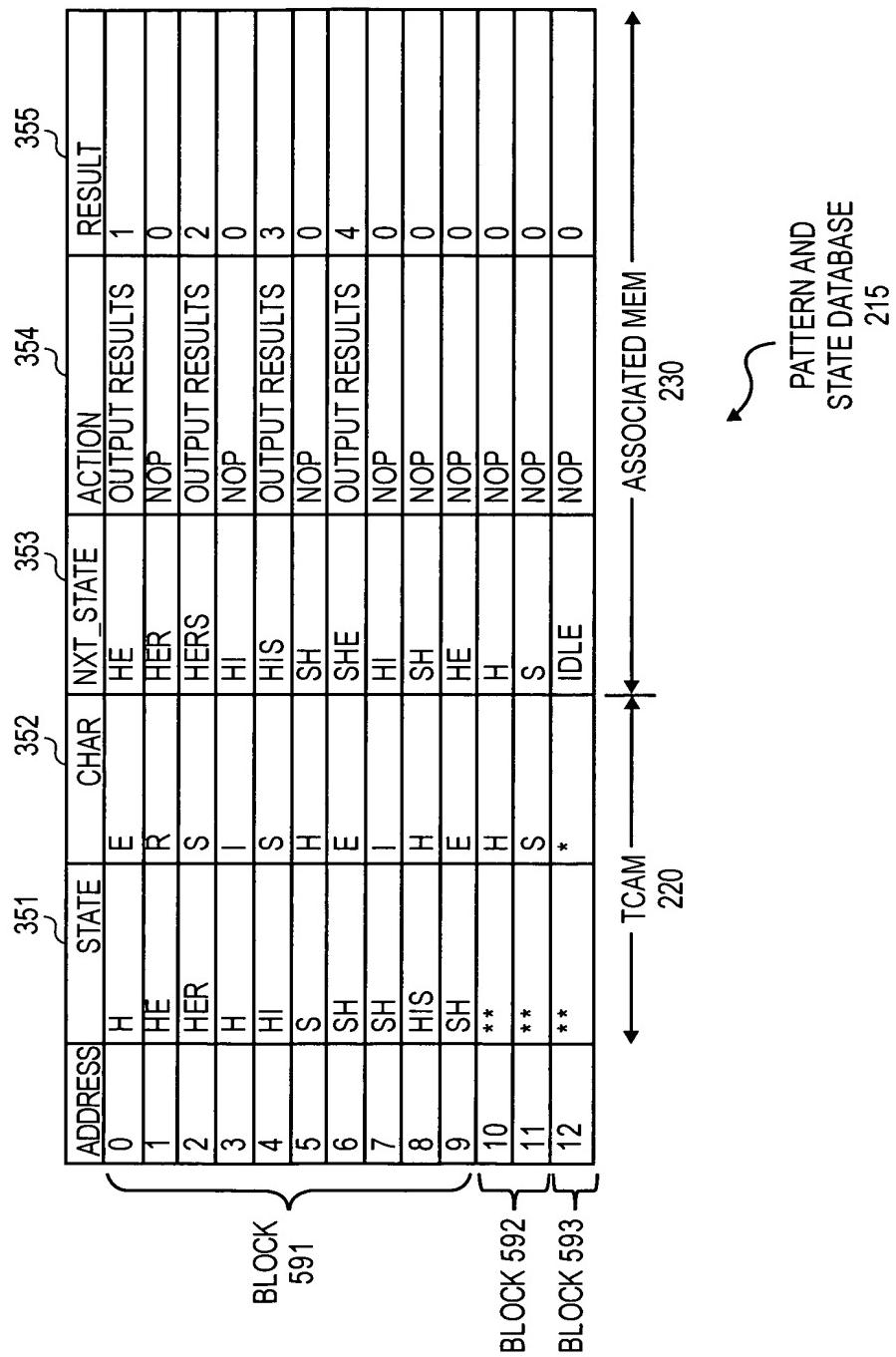


FIG. 6

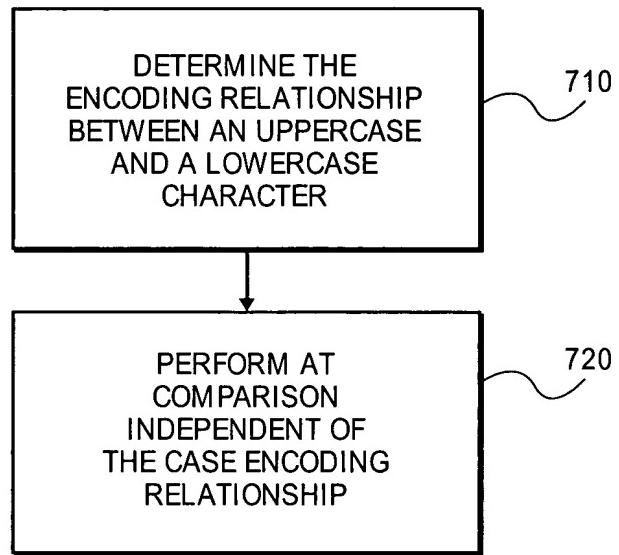


FIG. 7

FIG. 7A

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	TAB	LF	VT	FF	CR	SO	SI
1	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US
2	!	"	#	\$	%	&	(	)	*	*	+	-	-	<	>	?
3	0	1	2	3	4	5	6	7	8	9	:	:	:	=	>	?
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z	~	~	~	~	~
6	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	~
7	p	q	r	s	t	u	v	w	x	y	z	~	~	~	~	~

730

731

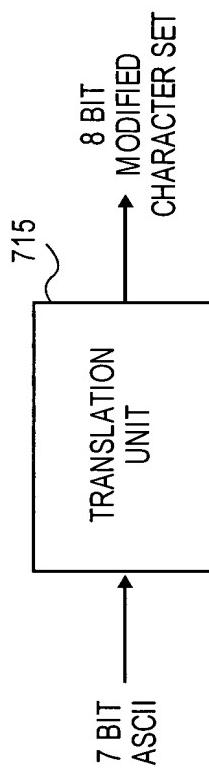


FIG. 7B

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	SOH	STX	EOT	ENQ	ACK	BEL	BS	TAB	LF	VT	FF	CR	SO	SI	
1	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US
2	!	"	#	\$	%	&	'	(	)	*	+	,	-	/	=	?
3	0	1	2	3	4	5	6	7	8	9	:	:	:	<	>	
4	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
5	P	Q	R	S	T	U	V	W	X	Y	Z					
6	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
7	p	q	r	s	t	u	v	w	x	y	z					
8																
9																
A																
B																
C																
D																
E																
F																

FIG. 7C

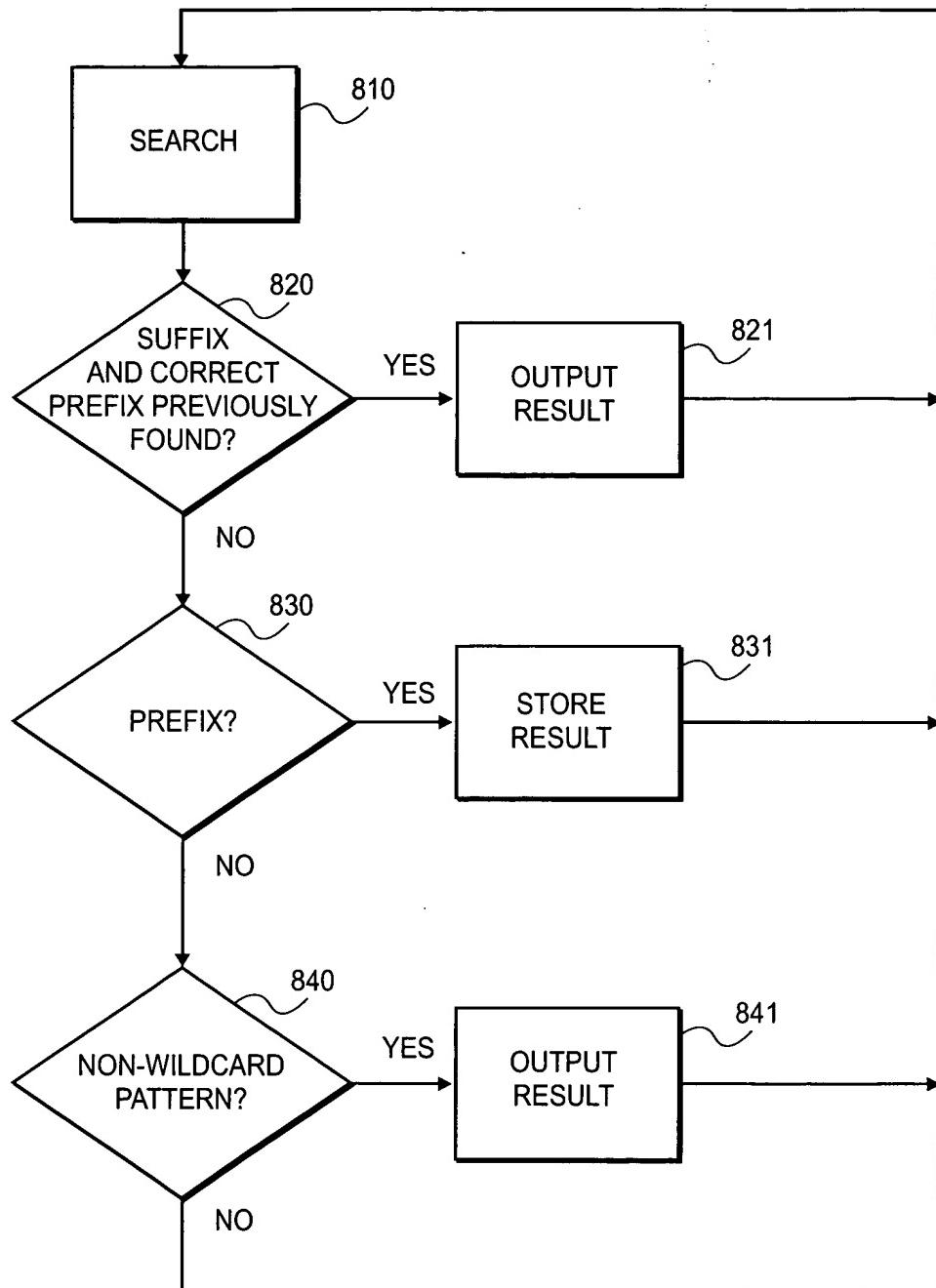
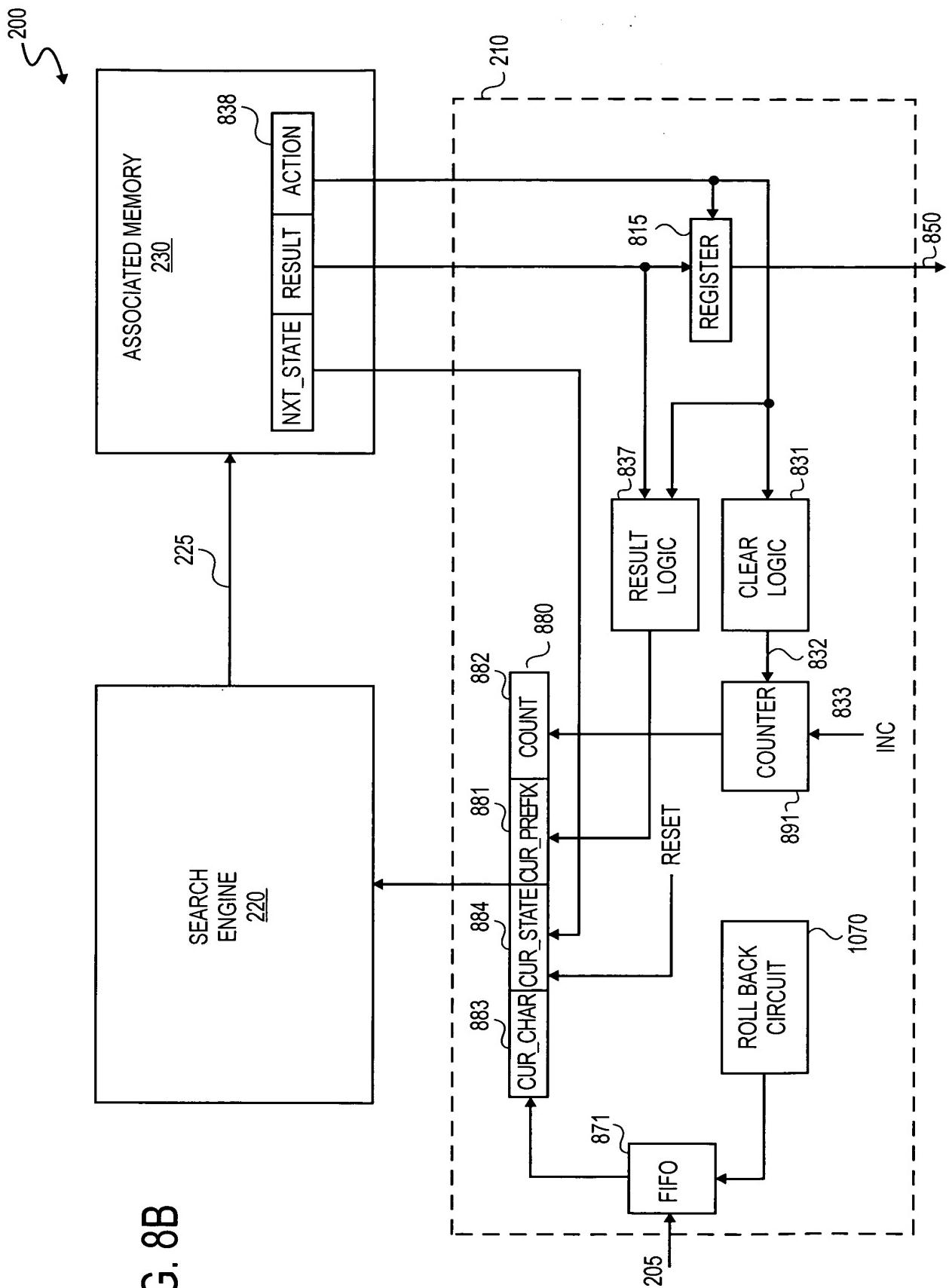


FIG. 8A

**FIG. 8B**



ADDRESS	STATE	CHAR	PREV_RSLT	NXT_STATE	RSLT	ACTION
0	IDLE	T	*	IDLE	101	UPDATE CUR_PREFIX
1	IDLE	B	*	B	0	NOP
2	B	L	*	BL	0	NOP
3	BL	E	101	IDLE	102	OUTPUT WILD CARD MATCH

351      352      353      354      355

TCAM 220      ASSOCIATED MEMORY 230

FIG. 8C

ADDRESS	STATE	CHAR	PREV_RSLT	COUNT	NXT STATE	RSLT	ACTION
0	IDLE	T	*	0	IDLE	101	UPDATE CUR_PREFIX
1	IDLE	B	*	*	B	0	NOP
2	B	L	*	*	BL	0	NOP
3	BL	E	101	5	IDLE	102	OUTPUT WILD CARD MATCH

351            352            353            354  
 355            356            357            355

The diagram illustrates the mapping of memory addresses to hardware components. Address 351 points to TCAM 220, address 352 points to associated memory 230, and addresses 353 through 357 point to both TCAM 220 and associated memory 230.

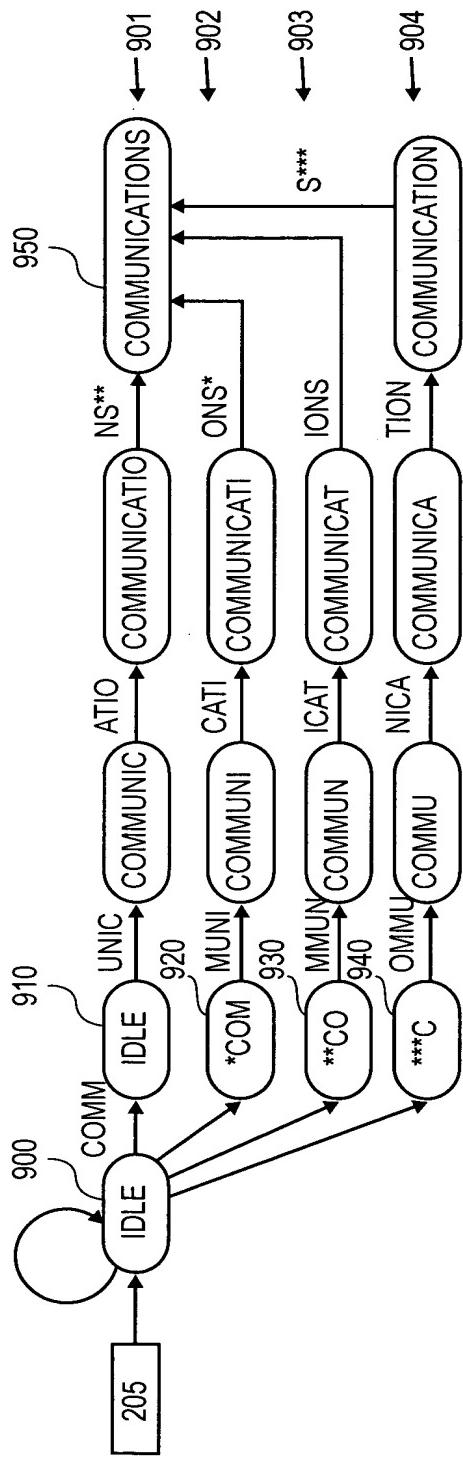
FIG. 8D

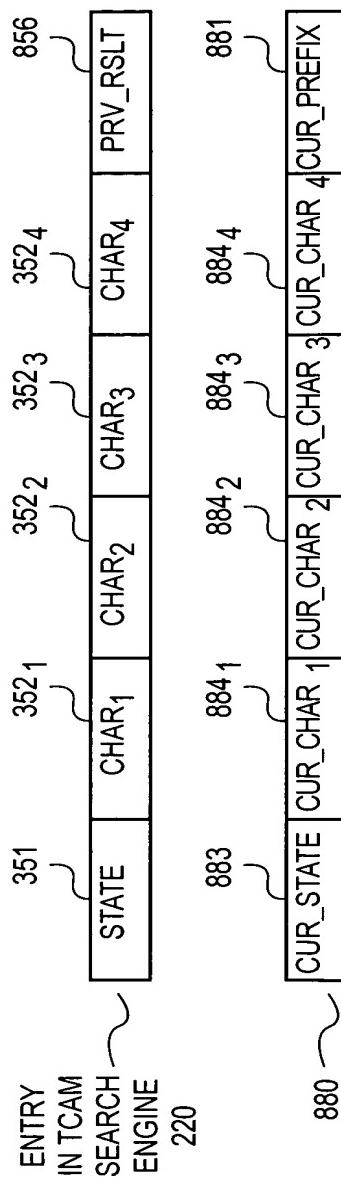
ADDRESS	STATE	CHAR	PREV_RSLT	NXT_STATE	RSLT	ACTION
0	IDLE	S	*	IDLE	102	UPDATE CUR_PREFIX
1	IDLE	T	*	IDLE	101	UPDATE CUR_PREFIX
2	IDLE	B	*	B	0	NOP
3	B	L	*	BL		NOP
4	BL	E	101	IDLE	103	OUTPUT FIRST
5	BL	E	102	IDLE	104	OUTPUT SECOND
						WILD CARD MATCH
						WILD CARD MATCH

351      352      856      355      353      355      354

FIG. 8E

FIG. 9A





**FIG. 9B**

ADDRESS	STATE	CHARS	NXT STATE	RSLT	ACTION
0	COMM	UNIC	COMMUNIC	0	NOP
1	COMMUNIC	ATIO	COMMUNICATIO	0	NOP
2	COMMUNICATIO	NSCO	CO	102	OUTPUT RESULT
3	COM	MUNI	COMMUNI	0	NOP
4	COMMUNI	CATI	COMMUNICATI	0	NOP
5	COMMUNICATI	ONSC	C	102	OUTPUT RESULT
6	CO	MMUN	COMMUN	0	NOP
7	COMMUN	ICAT	COMMUNICAT	0	NOP
8	COMMUNICATION	SCOM	COM	102	OUTPUT RESULT
9	C	OMMU	COMMU	0	NOP
10	COMMU	NICA	COMMUNICA	0	NOP
11	COMMUNICA	TION	COMMUNICATION	0	NOP
12	COMMUNICAT	IONS	IDLE	102	OUTPUT RESULT
13	COMMUNICATIO	NS**	IDLE	102	OUTPUT RESULT
14	COMMUNICATI	ONS*	IDLE	102	OUTPUT RESULT
15	COMMUNICATION	S***	IDLE	102	NOP
16	*	COMM	COMM	0	NOP
17	*	*COM	COM	0	NOP
18	*	**CO	CO	0	NOP
19	*	***C	C	0	NOP
20	*	****	IDLE	0	NOP

BLOCK 960<sub>1</sub>

BLOCK 960<sub>2</sub>

BLOCK 960<sub>3</sub>

BLOCK 960<sub>4</sub>

351      352      353      354      355

FIG. 9C

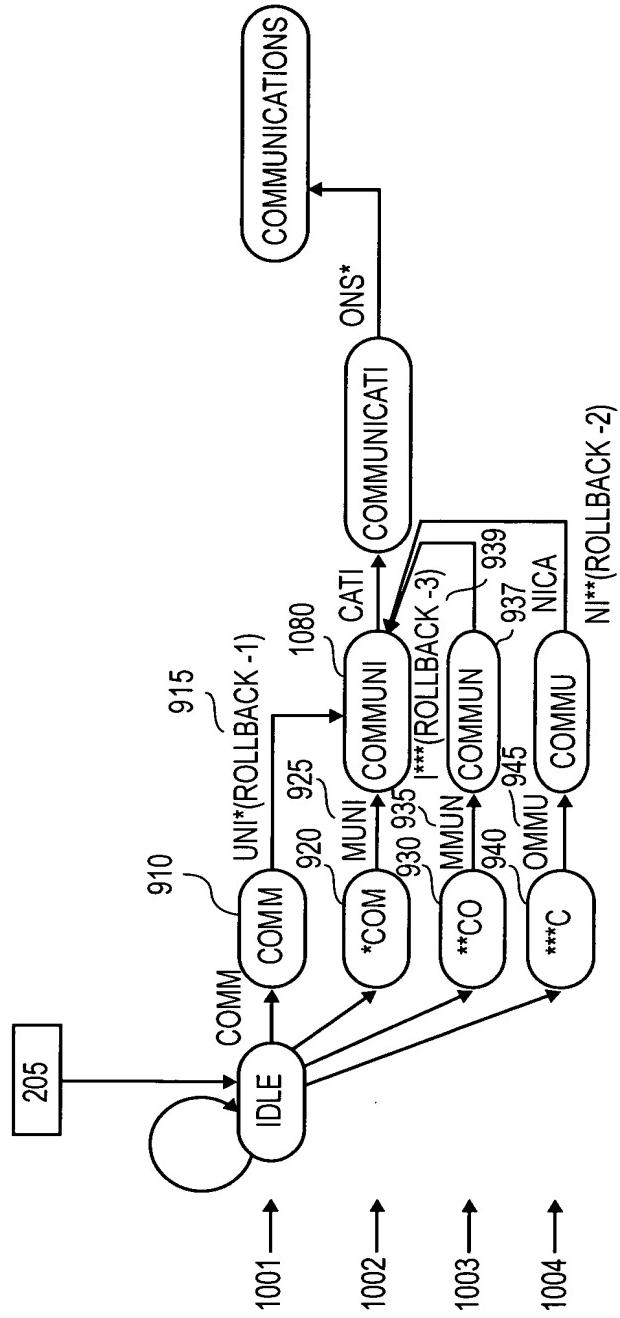


FIG. 10A

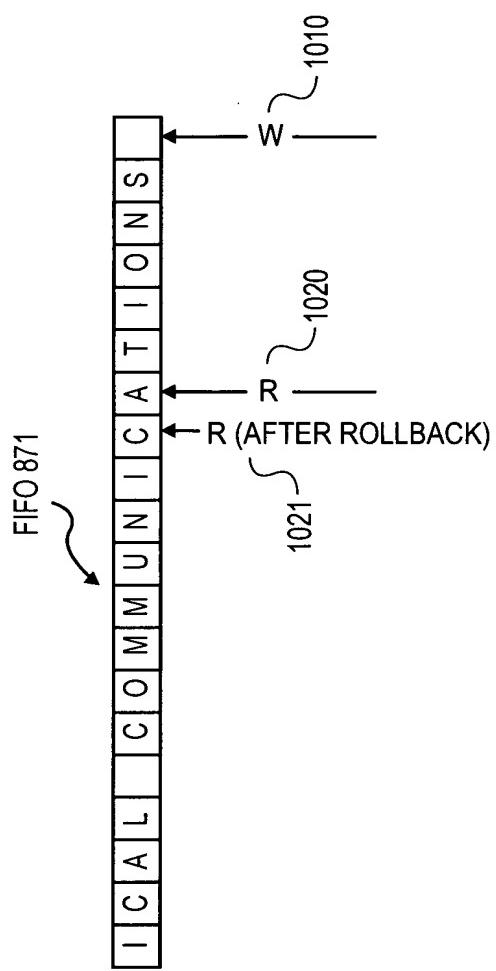
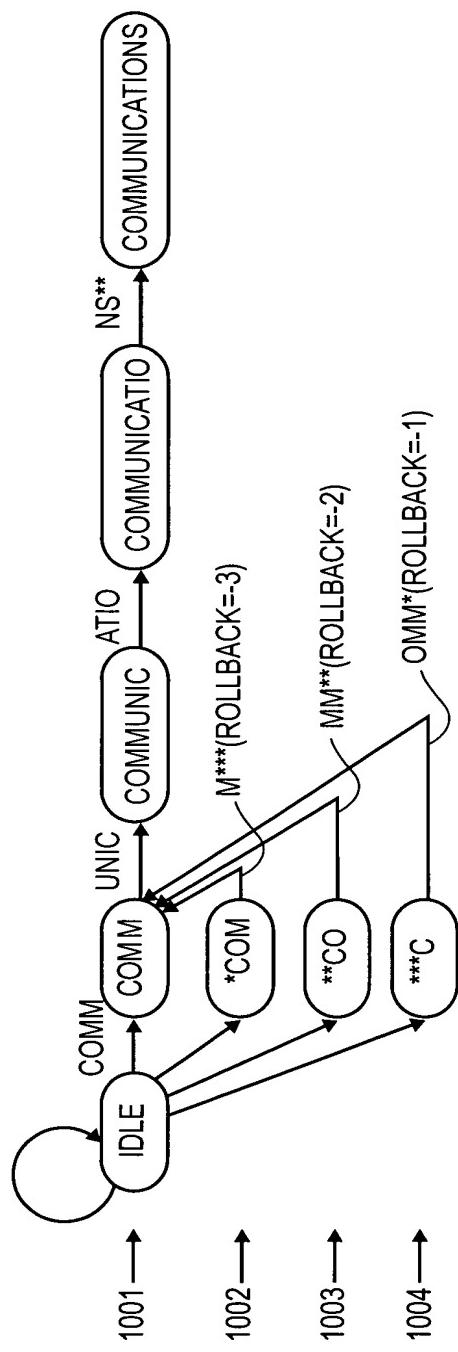


FIG. 10B

FIG. 10C



ADDRESS	STATE	CHARS	NXT_STATE	ROLLBK	RSLT	ACTION
0	COMM	UNI*	COMMUNI	1	0	NOP
1	COM	MUNI	COMMUNI	0	0	NOP
2	COMMUNI	CATI	COMMUNICATI	0	0	NOP
3	COMMUNICATI	ONS*	IDLE	1	102	OUTPUT RESULT 102
4	CO	MMUN	COMMUN	0	0	NOP
5	COMMUN	***	COMMUNI	3	0	NOP
6	C	OMMU	COMMU	0	0	NOP
7	COMMU	NI**	COMMUNI	2	0	NOP
8	*	COMM	COMM	0	0	NOP
9	*	* COM	COM	0	0	NOP
10	*	** CO	CO	0	0	NOP
11	*	*** C	C	0	0	NOP
12	*	****	IDLE	0	0	NOP

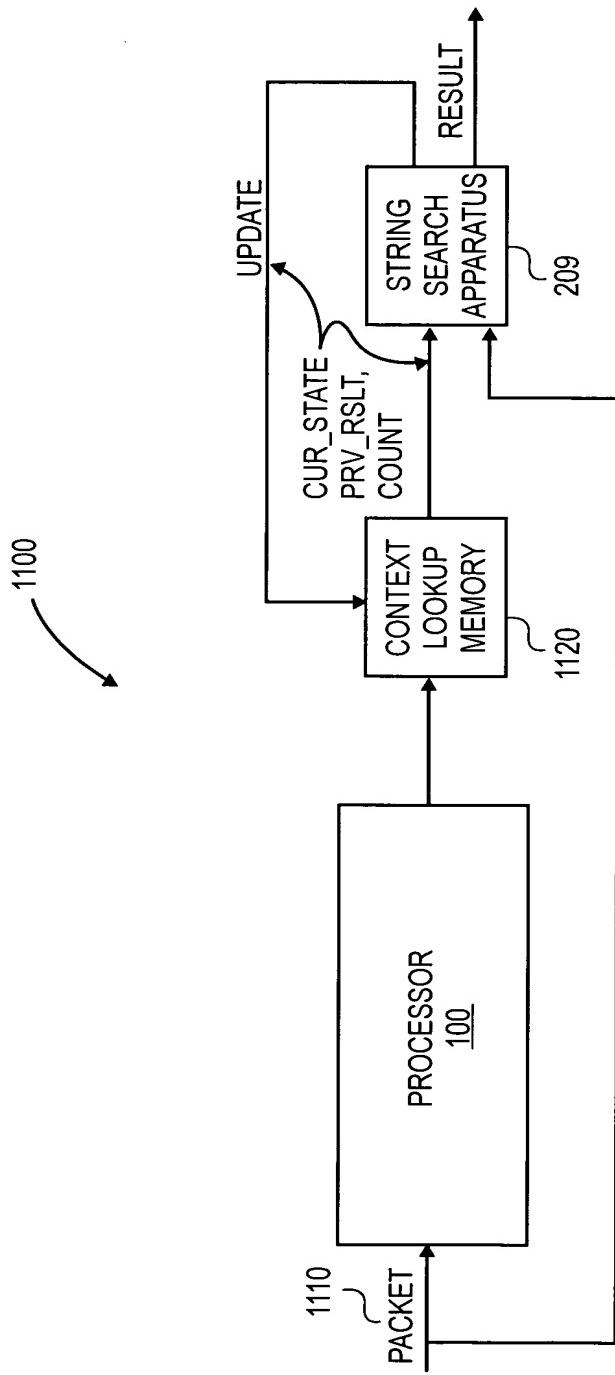
BLOCK 1030<sub>1</sub>      BLOCK 1030<sub>2</sub>      BLOCK 1030<sub>3</sub>

→ ASSOCIATED MEMORY 230 →

← TCAM 220 ←

351      352      353      354      1041      354

FIG. 10D



**FIG. 11**